

From: [BAYUK Dana](#)
To: [Pradeep Mugunthan](#); [Bob Wyatt](#); [David Rabbino \(David.Rabbino@jordanramis.com\)](#)
Cc: [Binglei Gong](#); [Ben Hung](#); [Scott Coffey](#); [Carl Stivers](#); [DeMaria, Eva](#); ["Gamache, Matthew"](#); [LARSEN Henning](#); [Ilene M. Munk \(imunk@foleymansfield.com\)](#); [John Edwards](#); [James Peale](#); [John Renda](#); [Mike Murray](#); ["Madi Novak"](#); [Mike Riley](#); [Myron Burr \(myron.burr@siltronic.com\)](#) ([myron.burr@siltronic.com](#)); [Miao Zhang](#); [Patty Dost](#); [Peterson, Lance](#); [Rob Ede](#); [Sheldrake, Sean](#); [Jen Mott](#)
Subject: RE: NW Natural, Gasco and Northern Siltronic Sites Groundwater Modeling Report
Date: Thursday, January 12, 2017 9:09:42 AM
Attachments: [Gasco-GW Modeling Workshop Follow-up Model Contours and Velocity Vectors.pdf](#)

Good morning Pradeep.

DEQ approves NW Natural's request to submit the revised groundwater modeling report by February 17, 2017 for the reasons cited in your e-mail.

Regarding the other two items referenced in your e-mail, to avoid potential confusion I've attached the model-predicted groundwater elevation contour figures that we are requesting for inclusion in the revised report. In addition, this e-mail confirms that NW Natural will include responses to DEQ's requests for information as an appendix to the revised report.

Please feel free to contact me with questions and hope your day is going well.

Dana

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Please visit our website at <http://www.oregon.gov/DEQ/>

From: Pradeep Mugunthan [pmugunthan@anchorqea.com]
Sent: Wednesday, January 11, 2017 10:08 AM
To: BAYUK Dana; Bob Wyatt; David Rabbino (David.Rabbino@jordanramis.com)
Cc: Binglei Gong; Ben Hung; 'Scott Coffey <coffeyse@cdmsmith.com>'; Carl Stivers; Eva DeMaria (DeMaria.Eva@epa.gov); 'Gamache, Matthew'; LARSEN Henning; Ilene M. Munk (imunk@foleymansfield.com); John Edwards; James Peale; John Renda; Mike Murray; 'Madi Novak'; Mike Riley; Myron Burr (myron.burr@siltronic.com) (myron.burr@siltronic.com); Miao Zhang; Patty Dost; Peterson, Lance; Rob Ede; Sean Sheldrake; Jen Mott
Subject: RE: NW Natural, Gasco and Northern Siltronic Sites Groundwater Modeling Report

Hello Dana,

Thank you for the approval on the Gasco groundwater model and the detailed comments on the Draft Modeling Report. As per our discussion this morning several comments (provided as an attachment with DEQ's approval letter on December 30, 2016) requires the additional model runs and analyses. Specifically:

- Comment 13 requests contribution of the river to the HC&C system be included in the flow budget similar to the information provided with an earlier calibration provided in the Dec 2nd Workshop. This will require setting up new long-term tracer transport simulations for both the Phase 1, Step 6 period and the 2016 Feb-Mar Wet Period to

develop the estimates of the river contribution to the HC&C system

- Comments 18c and 18e requests that an evaluation of the vertical gradients be completed for a period with lower HC&C pumping. This would require setting up a new steady-state simulation for a period with a lower HC&C extraction and developing new particle tracking simulations for this period.
- Comment 18f requires an additional simulation without HC&C extraction to recreate versions of Figures 5-4 and 5-5 without the influence of HC&C pumping
We request an extension to February 17, 2017 for resubmitting the groundwater modeling report so that we can complete all the model runs and the associated analyses to address the comments mentioned above.

We also seek confirmation on two other items we discussed this morning:

- Comment 23 requests that model-predicted groundwater elevation contours submitted to DEQ on August 2, 2016 be included in the appendix. We have a record of submitting model groundwater elevation contours on July 20, 2016 (e-mail from Pradeep Mugunthan to Dana Bayuk, RE: Gasco Groundwater Modeling Workshop Follow-up), but don't seem to have a record of submittal on August 2, 2016. Can you clarify if including the the elevation contours submitted with July 20, 2016 e-mail as an appendix to the revised report would address this comment?
- We discussed including our responses as an appendix to the revised report. Can you please confirm?

Thanks.
Pradeep

Pradeep Mugunthan, Ph.D., P.E.

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From: BAYUK Dana [<mailto:dana.bayuk@state.or.us>]

Sent: Friday, December 30, 2016 3:12 PM

To: Bob Wyatt <rjw@nwnatural.com>; David Rabbino (David.Rabbino@jordanramis.com) <david.rabbino@jordanramis.com>

Cc: Binglei Gong <bgong@anchorqea.com>; Ben Hung <bhung@anchorqea.com>; 'Scott Coffey' <coffeyse@cdmsmith.com> <coffeyse@cdmsmith.com>; Carl Stivers <cstivers@anchorqea.com>; Eva DeMaria (DeMaria.Eva@epa.gov) <demaria.eva@epa.gov>; 'Gamache, Matthew' <gamachem@cdmsmith.com>; LARSEN Henning <henning.larsen@state.or.us>; Ilene M. Munk (imunk@foleymansfield.com) <imunk@foleymansfield.com>; John Edwards <jedwards@anchorqea.com>; James Peale <jpeale@maulfoster.com>; John Renda <jrenda@anchorqea.com>; Mike Murray <mmurray@maulfoster.com>; 'Madi Novak' <mnovak@maulfoster.com>; Mike Riley <mriley@anchorqea.com>; Myron Burr (myron.burr@siltronic.com) (myron.burr@siltronic.com) <myron.burr@siltronic.com>; Miao Zhang <mzhang@anchorqea.com>; Patty Dost <pdost@pearllegalgroup.com>; Peterson, Lance <petersonle@cdmsmith.com>; Pradeep Mugunthan <pmugunthan@anchorqea.com>; Rob Ede <robe@hahnenv.com>; Sean Sheldrake <sheldrake.sean@epa.gov>

Subject: NW Natural, Gasco and Northern Siltronic Sites Groundwater Modeling Report

Hello Bob.

DEQ reviewed the "Gasco Groundwater Modeling Report, NW Natural 'Gasco Site'" dated October 14, 2016 (Draft Model Report). The Draft Model Report describes the development, calibration, sensitivity analyses, and validation

of a groundwater model designed to simulate the hydraulic influence of the HC&C system on the Fill water-bearing zone (WBZ) and the Upper Alluvium WBZ, Lower Alluvium WBZ, and Deep Lower Alluvium WBZ for the Gasco Site and the northern portion of the Siltronic facility.

In addition to DEQ, EPA reviewed the report. EPA's comments are attached. DEQ concurs with EPA's comments and considers them complete.

The primary purpose of this letter is to inform NW Natural that based on our review of the Draft Model Report, EPA and DEQ:

- Acknowledge the overall goals and objectives of the groundwater modeling work have been achieved; and
- Approve the report subject to NW Natural revising and resubmitting the document, and responding to our requests for information, consistent with the attached comments.

DEQ requests that NW Natural revise and resubmit the Model Update Report and provide the information requested on or before January 31, 2017.

DEQ acknowledges and appreciates the time and resources NW Natural has committed to developing the groundwater model. Please contact me with questions regarding this letter or the attachment and hope you enjoy the New Year's holiday.

Dana

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